

ON THE IDENTITY OF *SALDULA LATICOLLIS* (REUTER)
(HETEROPTERA: SALDIDAE)

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Polhemus (1977) concluded that the American forms of shore bugs currently referred to as *Saldula palustris* (Douglas) are specifically differentiated from the true *S. palustris*, a species originally described from England and widely distributed in the Palaearctic region. According to that author, the valid name of one of the American forms is *Saldula fernaldi* Drake. This is a predominantly coastal species which is commonly distributed in salt marsh habitats along the Pacific coast from Alaska to Baja California and on the Atlantic coast from New England northwards (Polhemus and Chapman, 1979). Independent studies by the present author fully confirm the conclusions reached by Polhemus as to the specific separation of *S. palustris* and the allied New World forms. However, my studies also show that *S. fernaldi* is a synonym of *Saldula laticollis* (Reuter, 1875). As *S. laticollis* has priority by age, this name must replace *S. fernaldi* as the valid name of this form. This conclusion was reached after a revision of the type material of *S. laticollis* and studies of the North American forms involved.

S. laticollis is listed by Polhemus (op. cit.) as a synonym of *Saldula pallipes* (F.), therein following the view of Reuter (1890) and reiterated by subsequent authors (Oshanin, 1908; Drake and Hoberlandt, 1951). Further, "Siberia" is quoted as the *terra typica* of *S. laticollis*. However, as already explained by Reuter (1912), the assignment of Siberia as the *terra typica* in the original description of *S. laticollis*, as well as the more specific indication "Ad Irkutsk habitans" given under the redescription of this form in Reuter (1879) was based upon a misinterpretation. The type material of *S. laticollis* had in fact been collected at Sitka on the Baranof Island, Alaska, by the well-known Finnish entomologist and explorer, Reinhold Ferdinand Sahlberg, during his stay there in 1840-1841 (cf. Saalas, 1958), i.e. at a time when the Alaskan Peninsula still was a Russian colony.

A revised synonymy and nomenclature of *S. laticollis* and included nominal forms is given below, together with supplementary taxonomic data on this and allied species of the Holarctic *S. pallipes-palustris* complex. The figures and descriptions of male genital structures are based upon dry mounts prepared from fully sclerotized specimens, according to Lindskog (1974).

NRS = Naturhistoriska Riksmuseet, Stockholm (the Swedish Museum of Natural History).

Saldula laticollis (Reuter)

Acanthia (= *Salda*) *laticollis* Reuter, 1875: 544. LECTOTYPE male, ALASKA: Sitka (NRS), here designated. Reuter, 1879: 32 (redescription (as *Salda*)). Reuter, 1890: 251 (*laticollis* reduced to a variety of *Acanthia pallipes* Fabricius, 1794). Reuter, 1912: 71 (discussion of taxonomic status, earlier statements of type locality of *laticollis* corrected). Drake and Hoberlandt, 1951 (catalog; *laticollis* listed as synonym of *Saldula pallipes* (F.)).

Saldula fernaldi Drake, 1949: 191. Drake, 1962: 116 (*fernaldi* synonymized with *Saldula palustris* (Douglas, 1874)). Polhemus, 1977 (unpublished dissertation; *fernaldi* restored to specific status, separated from *palustris*).

Saldula notalis Drake, 1950: 4. Polhemus, 1977 (unpublished dissertation; *notalis* synonymized with *fernaldi*).

Saldula notabilis Drake, 1950: 5 (alternate spelling for *notalis* Drake, 1950 in the same work). Drake and Hoberlandt, 1951 (catalog; adoption of *notabilis* as the correct name).

Saldula palustris of authors (nec Douglas).

Type material.—The original description of *S. laticollis* was based upon material deposited in Coll. NRS ("Mus. Holm."). The number of specimens was not stated by the author. Two specimens of the same species are present under *laticollis* in Coll. NRS. They have no type label or any other determination labels attached to them. However, they clearly represent the authentic material of this form, as evidenced by the locality and collector data and their diagnostic features.

Lectotype male, labelled: "Sitka," "Stål" /= Coll. Stål/, "Lectotypus *Acanthia laticollis* Reuter, P. Lindskog." Female, labelled: "Sitka," "F. Sahlberg /= collector/, "Paralectotypus *Acanthia laticollis* Reuter, P. Lindskog." Both specimens are pinned and in a fairly good state of preservation. The primary diagnostic features (dorsal pilosity, hemelytral coloration) are clearly observable. Total body length, male (lectotype) = 4.86 mm, female = 5.38 mm.

Taxonomic remarks.—The intricate problem of the taxonomic relationships of the Old and New World forms of the *S. pallipes-palustris* complex has been a subject of much discussion and confusion (Cobben, 1960a; Schuh, 1967; Stock, 1972; Polhemus, 1977). This confusion stems from the fact that European populations of *S. pallipes* and *palustris* have served as the basis of comparison when discussing the identity and status of the American forms. Accordingly, the standard concept of these two species is

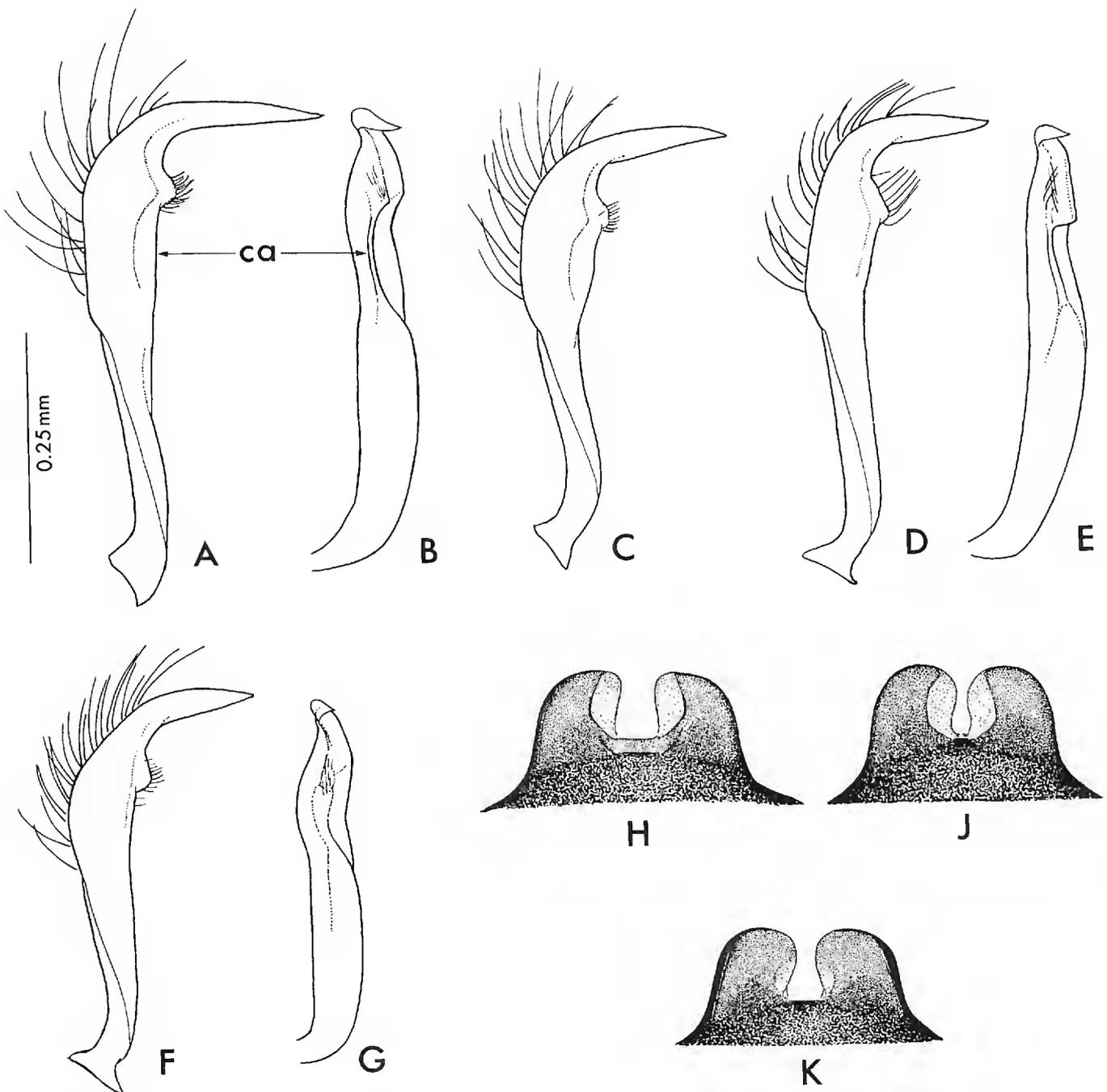


Fig. 1. Right paramere in front and inner view (A–G) and parandria, hind views (H–K)—A + B, *Saldula laticollis* (orig. Oregon: Toledo)—C, idem (orig. California: Tomales Bay)—D + E, *S. pallipes* (orig. Siberia: Abakan)—F + G, *S. palustris* (orig. Kamchatka)—H, *S. laticollis* (orig. as in A)—J, *S. pallipes* (orig. as in D)—K, *S. palustris* (orig. as in F). ca = carina.

based upon the differential diagnostic characters of the orderly or eunomic patterns of sequential variation of the dark and light coloration of the hemelytra and in the length of the hairs of the processus sensualis of the male parameres, as first elaborated in more detail by Wagner (1951) and Cobben (1960b) and then primarily with regard to (West) European populations. Both species have very wide trans-Palaeartic ranges, however, and patterns of geographic variation must be accounted for. In fact, a geographic

variation in hemelytral color eunomies between several Central European populations of *S. pallipes* and *palustris* has recently been described (Karněcká, 1978). Moreover, populations from North America, notably the northwestern regions (Alaska, etc.), should primarily be compared with populations from East Eurasia, viz. NE Siberia and Kamchatka, where the presence of both species recently has been confirmed. I have had the opportunity to study material of *S. pallipes* and *palustris* from their entire Palaearctic range, including a very large material from the U.S.S.R. and adjacent Asiatic regions in the collections of the Zoological Institute of the Academy of Sciences of the U.S.S.R., Leningrad. When considering the total spectrum of variability of *S. pallipes* and *palustris*, a complete intergradation and overlap in hemelytral color patterns, shape and proportions of the body and body parts and features of the dorsal pilosity between these species can be established. Thus none of these external features can be employed as a universally valid character for identifying and separating these geographically broadly overlapping species. However, when each regional situation in the phenetic interrelationships of these two species is studied and treated separately, a more or less reliable separation by means of various combinations of these characters is generally possible. A similar situation is likely to exist among the American species of this complex.

The basic diagnostic characters differentiating *S. pallipes* and *palustris* concern the structure and shape of the male parameres (Fig. 1D–G). *S. pallipes* is primarily distinguished by the very long hairs of the processus sensualis (Fig. 1D) and by the shape of the inner side of the paramere body (corpus parameri) which is produced as a sharp edge at the level of the processus sensualis (Fig. 1E) instead of being smooth as in *palustris* (Fig. 1G). Further, the parameres of *S. pallipes* are markedly longer and less curved and the ventral carina (cf. Fig. 1A–B) proximal to the processus sensualis is more strongly developed and prominent compared with *palustris* (Fig. 1E, G). The distinctive features of *S. pallipes* and *palustris* in the structure and the overall shape and size of the parameres illustrated in Fig. 1 on the basis of specimens from Western Siberia and Kamchatka, respectively, are seen to agree quite closely with the situation previously described for populations from Finland (Lindskog, 1974, Fig. 1), and have further been verified in material from many other regions (e.g. North Africa, Middle and Central Asia). In addition to the type material, specimens of *S. laticollis* were studied from Alaska: Valdez Bay, Oregon: Yaquina River estuary, and California: Tomales Bay and San Diego, which form part of the material of Bahr and Schulte (1976), and which were determined by J. T. Polhemus (in 1973) as *S. palustris* and *S. notalis*. As stated by Polhemus (1977), *S. laticollis* (= *S. fernaldi*) is distinguished by the constant presence of long, curved, semi-recumbent or suberect setae on the head. The dorsal pilosity

is rather variable, sometimes markedly coarse and shaggy with several longer, erect or suberect setae on pronotum (= *S. notalis*). In *S. palustris* and *S. pallipes* (Old World populations) the pubescence of the head and dorsum is uniformly short and recumbent. The parameres of *S. laticollis* are rather variable in shape and size, as partly shown by Fig. 1 and also noticed and illustrated by Polhemus (1977). All specimens studied by me clearly differ from *S. palustris* as well as *S. pallipes* by the ventrally more strongly carinate paramere body (Fig. 1A–C) and the generally longer and more strongly acuminate processus hamatus. *S. laticollis* further differs from *S. pallipes* by the shorter hairs of the processus sensualis and through the lack of any similarly marked edge-like structure on the inner side of the paramere body. The male parandrial lobes of *S. laticollis* are separated by a moderately wide notch and their inner membranous margins are only slightly converging distad (Fig. 1H). In *S. pallipes* and *palustris* the parandria are distally more broadly and evenly rounded and their inner margins more or less strongly converging distad (Fig. 1J–K). Generally the parandria of *S. pallipes* are more narrowly separated and often less extensively sclerotized compared with *S. palustris*, as shown by the figures. These latter differences are essentially of a statistical nature only and cannot be used for a critical species identification.

I have not been able to study authentic material of *S. pallipes* from the New World. A few specimens in the aforementioned material from San Diego determined as *S. pallipes* were found to be light color forms of *S. laticollis*. Some specimens in NRS labelled "Colorado" (Morrison lgt.) have been determined as "*S. pallipes* var." by C. J. Drake. With respect to the hemelytral color pattern they agree with *S. pallipes* as well as with *S. palustris*, notably with some forms of the latter species occurring in the arid zones of southern Russia and Middle Asia (relatively small size, pronotum with a relatively dense and moderately long, fine, appressed, silvery or golden pubescence). The parameres are also closely similar to *S. palustris*, but the parandria are of a quite different shape, size, and configuration compared with this and the other species above. This form probably represents an undescribed species. The male genital structures of *S. pallipes* from America figured by Polhemus (1977) well agree with the Old World form, except for the apparently short hairs of the processus sensualis. More studies are clearly needed in order to clarify the phenetic and taxonomic relationships between the Old and New World forms of this taxon.

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